Appendix B: Photoslope Analysis

Recent changes to FAA Order 8260.3 (United States Standards for Terminal Instrument Procedures-TERPs) have included wording that if there are close-in obstructions or if there is a lack of approach information to determine the status of the Final Approach Course Visual Surface, night instrument flight rules (IFR) approaches will not be allowed for a particular runway or, in the extreme case, for the airport itself. Because of the Illinois Department of Transportation's experience with the PHOTOSLOPE process, they petitioned the FAA to have the results of PHOTOSLOPE used as sufficient documentation to confirm the status of their TERPS surfaces, as defined by Paragraph 251 of FAA Order 8260.3. On September 4, 2003, the FAA's Flight Technologies and Procedures Division approved the use of PHOTOSLOPE to document the visual surface assessment process of TERPs Paragraph 251.

TERPs Survey Process

In order to complete the PHOTOSLOPE analysis for TERPs Paragraph 251 requirements, a rigorous process has been established by GCR to ensure a high quality product with very accurate results. All work is accomplished in accordance with the requirements of specific runways, as defined in Terminal Instrument Procedures (TERPs) surfaces as described by Federal Aviation Administration (FAA) Order 8260.3B, Paragraph 251, Change 19.

GCR photogrammetrically documents the status of the specified runway based on TERPs surfaces as defined in FAA Order 8260.3B, Paragraph 251, Change 19, for the specified airports in the State of Vermont. GCR identified and located obstructions to each TERPS surface. In order to fulfill these requirements, GCR conducted the following:

- Surveyed and located monuments to be used for terrestrial photography
- Photographed the TERPs surface using PHOTOSLOPE terrestrial photography
- Identified the controlling obstruction and any other obstructions in accordance with FAA Order 8260.3B, Paragraph 251, Change 19

GCR assessed both straight-in approaches and offset approaches. In order to calculate offset approach requirements, the following data elements were used to develop the boundaries of the Visual Segment for Offset Course:

1) Sources of data used in computing the Offset Area

- Runway end geographic coordinates were obtained from FAA 5010 database and from VTrans Airport Directory
- The geographic coordinates of VORs were obtained from the FAA VOR database.
- The magnetic variation was also obtained from the FAA database.
- The published Instrument Approach Procedure Plate were used to obtain the following:
  - the Visual Descent Point (VDP) Distance
  - the final offset course magnetic azimuth to the VOR
  - computations for the geometric layout of the Visual Area were established using the software program COMPSYS21 (Digital Aeronautical Database System, DADS version 2.8/01) available on line from FAA
  - computations (all azimuths are magnetic in decimals of a degree; with distances in nautical miles (nm) or feet as (ft) as indicated and Geographic Coordinates are NAD 83

2) Offset Data Table

One of the deliverables is an Offset Data Table, which contains the Latitude and Longitude of each of the significant points of reference and alignments used to establish the Offset Final Approach Segment. The points of reference include:

- Runway end of pavement
- VOR
- Visual Decent Point (VDP)
- Point on Extended Centerline
- Flare Angle for Straight-in Approach
- Flare Angle for Offset
- Magnetic Variance

3) Aerial Photograph with Overlays

An aerial photo was provided with a depiction of the Offset Final Approach Segment. This overlay also included the location of critical obstructions to the surface.

4) Sketch showing the configuration of the Runway End Offset Surface

A sketch showing the construction of the Offset Surface was provided for each analysis.

All objects identified in the PHOTOSLOPE™ documentation will have been established using the Giant Software Program written for use by the U.S. Army Corps of Engineers in locating objects from aerial and terrestrial photography. The "object control" component of the Giant Software output confirms the accuracy of the controlling object to be less than 2 Ft. Horizontal and less than 1 Ft. vertical. Horizontal control is based on NAD 83 and vertical control is based on NAVD 88.

DELIVERABLES

For each airport, GCR provided a PHOTOSLOPE booklet, which includes the dimensions and slope used to define each of the calculated surfaces and the procedures used to confirm the presence or absence of obstructions penetrating above these surfaces. The booklet includes all photographs, data tables, sketches and illustrations of each evaluation.

GCR also prepared one copy of a final report documenting all work described above, including all photographs and obstruction tables for each airport. GCR prepared a summary report of all surveys conducted at all airports for VTrans. Additionally,

GCR developed one electronic copy of the final documentation and provided it in a format that is loadable on a public website for use by VTrans.